

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

RONDEVOO TECHNOLOGIES, LLC,  
a California Limited Liability,

Plaintiff,

v.

AERNOS, INC.,  
a Delaware Corporation,

Defendant.

C.A. No. 19-680-RGA

**JURY TRIAL DEMANDED**

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**AERNOS, INC.'S OPENING BRIEF IN SUPPORT OF ITS  
MOTION TO DISMISS FOR FAILURE TO STATE A CLAIM**

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## **I. NATURE AND STAGE OF PROCEEDINGS**

On April 11, 2019, Plaintiff Rondevoo Technologies, LLC filed this lawsuit accusing Defendant Aernos, Inc. of infringing United States Patent Nos. 9,453,814 and 9,927,391 (“the Asserted Patents”). Rondevoo accuses Aernos’s AerIoT device of infringing at least Claim 1 of the ’814 Patent and at least Claim 19 of the ’391 Patent. (D.I. 1, ¶¶ 16, 23, 28, 35.)

## **II. INTRODUCTION**

The Court should dismiss this case because the Asserted Patents are directed to the abstract idea of a sensor alerting the presence of a gas, chemical, or biological object. The alleged invention amounts to nothing more than a generic sensor in the nanotechnology field. Detecting data through naturally occurring phenomenon is an abstract idea that is ineligible for patenting. *See Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1376 (Fed. Cir. 2015) (holding that claims directed to detecting the presence of cell-free fetal DNA in maternal plasma for making a certain diagnosis covered patent ineligible subject matter — laws of nature and natural phenomenon — and thus were invalid).

The alleged invention does not add any inventive concept, much less a specific and unique method for implementing such a concept. Instead, the Asserted Patents recite conventional components performing conventional functions. For example, the Asserted Patents concede that the construction and operation of the nano sensor were conventional at the time of the invention. *See infra* Section II.B. Therefore, the Asserted Patents’ claims should be invalidated for failure to claim eligible subject matter.

Resolving these issues does not require discovery or formal claim construction. To avoid wasting judicial and party resources by litigating invalid patents, Aernos respectfully requests that this Court dismiss all claims in Rondevoo’s Complaint pursuant to Rule 12(b)(6) of the Federal Rules of Civil Procedure for failure to state a claim upon which relief can be granted.

### III. STATEMENT OF FACTS

The purported invention of the Asserted Patents relates to a sensor whose “electrical characteristic changes when encountering [a] gas, chemical or biological object.” ’814 Patent Abstract. The purported invention was driven by Moore’s law, which states that integrated circuit density doubles every eighteen months. *Id.* at 1:18-22. Specifically, the invention sought to solve the perceived problem of integrating analog and RF circuitry in a standard digital semiconductor. *Id.* at 1:22-30. The resulting application claimed “a device [including] an upper metallic layer, a lower layer, and a nano sensor array positioned between the upper and lower layers to detect a presence of a gas, a chemical, or a biological object, wherein each sensor’s electrical characteristic changes when encountering the gas, chemical or biological object.” *Id.* at Abstract. The ’391 Patent is a continuation of the application that resulted in the ’814 Patent and shares the same specification. Claim 1 of the ’814 Patent is representative and recites:

A device, comprising:

an upper metallic layer,

a lower layer,

a nano sensor array positioned between the upper and lower layers to detect a presence of a gas, a chemical, or a biological object, wherein each sensor's electrical characteristic changes when encountering the gas, chemical or biological object, and

a matrix film on the nano sensor array wherein a physical parameter of the matrix film changes to measure gas or liquid concentration.

The Asserted Patents describe embodiments of various types of nano sensors, including programmable analog nano sensors, nano-based chemical and biological sensors, nano-based image sensors, and nano antenna. ’814 Patent at 1:40-2:55. Figure 2, below, shows one embodiment of the nano sensor device, comprised of generic

components such as switches, static random access memory (SRAM), input and output terminals, and conductors.

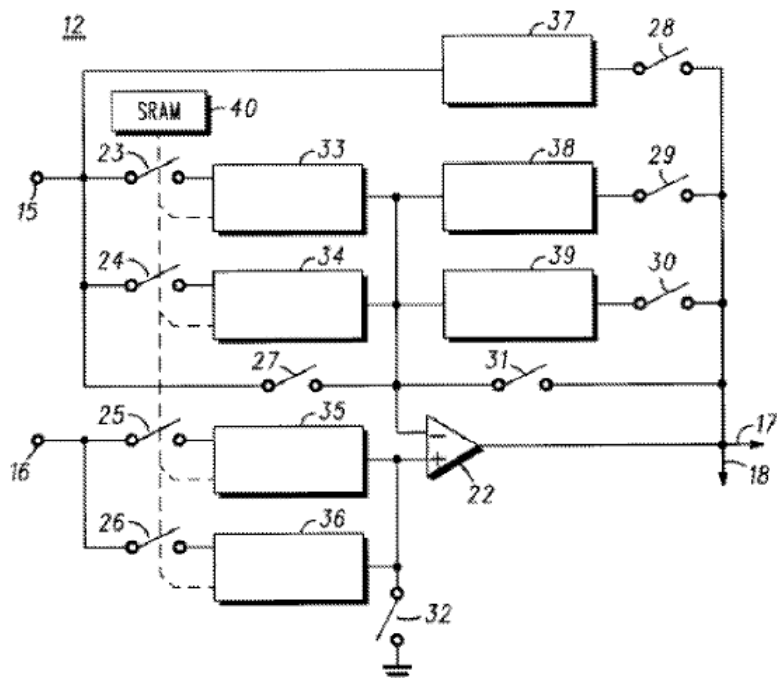


FIG. 2

*Id.* at 3:15-25.

The remaining independent claims of the '814 Patent are substantially similar to Claim 1, with slight rewording. All the independent claims in the '814 Patent recite generic terms identifying a physical position for the abstract concept of a sensor whose characteristics change when encountering a gas, chemical, or biological object. A routine step of measuring is also added.

Claim 1	Claim 19	Claim 20
A device, comprising	A device, comprising	A [sic] electronic device, comprising
an upper metallic layer,	An upper metallic layer	A first layer fabricated in silicon using semiconductor fabrication techniques

a lower layer,	A lower layer, and	a second layer formed next to the first layer to provide data storage,
a nano sensor array positioned between the upper and lower layers to detect a presence of a gas, a chemical, or a biological object, wherein each sensor's electrical characteristic changes when encountering the gas, chemical or biological object, and	a resistive, optical or magnetic nano sensor positioned between the upper and lower layers wherein nanoparticles form a conduction path between the upper and lower layers, and	the second layer having a lower layer formed next to the first layer; a resistive sensor element; and an upper layer formed next to the resistive element, wherein resistance changes when encountering a gas, a chemical, or a biological object, and
a matrix film on the nano sensor array wherein a physical parameter of the matrix film changes to measure gas or liquid concentration.	a matrix film on the nanoparticles, wherein a physical parameter of the matrix film changes to measure gas or liquid concentration.	a matrix film on the second layer wherein a physical parameter of the matrix film changes to measure gas or liquid concentration.

The dependent claims of the '814 Patent add generic components like switches, circuits, insulators, and electrodes, as well as specifying conventional sensing techniques such as using oxidized films, ultrasonic activation, vibration detection, and bulk wave detection.

The chart below shows that all the independent claims in the '391 Patent similarly recite generic terms identifying a physical position for the abstract concept of a sensor whose characteristics change when encountering a gas, chemical, or biological object. Independent Claim 19 of the '391 Patent states that the sensor's physical parameters change in the presence of a liquid, gas, chemical, or biological object, again, for the routine step of measuring the concentration of those objects.



<b>Claim 1</b>	<b>Claim 19</b>	<b>Claim 20</b>
A device, comprising:	A device, comprising:	An electronic device, comprising:
an upper layer,	an upper metallic layer,	a first layer fabricated in silicon using semiconductor fabrication techniques;
a lower layer, and	a lower layer, and	a second layer formed on the first layer;
a nano sensor array are vertically aligned, and the nano sensor array positioned between the upper and lower layers	a nano sensor positioned between the upper metallic layer and the lower layer, wherein the upper metallic layer, the lower layer, and the nano sensor are vertically aligned,	a nano sensor array formed on the second layer; and an upper layer formed on the nano sensor array, wherein the first layer, the second layer, the nano sensor array, and the upper layer are vertically aligned,
to detect a presence of a liquid, gas, chemical, or biological object, wherein the nano sensor array's electrical characteristic changes when encountering the liquid and wherein a physical parameter of the nano sensor array changes to measure a quantity or a presence of the liquid, gas, chemical, or biological object concentration.	wherein the nano sensor comprises a physical parameter that changes to measure liquid, gas, chemical, or biological object concentration.	wherein the nano sensor array's property changes when encountering a liquid, gas, chemical, or biological object.

And the dependent claims of the '391 Patent similarly add generic components like switches, circuits, insulators, and electrodes, as well as specifying conventional sensing techniques such as using oxidized films, ultrasonic activation, vibration detection, and bulk wave detection.

#### IV. ARGUMENT

##### A. Legal Standard

##### 1. This case should be disposed of at the pleading stage through Rule 12(b)(6).

Under Federal Rule of Civil Procedure 12(b)(6), a party may move to dismiss a complaint that fails to state a claim upon which relief can be granted. To survive a Rule 12(b)(6) motion, a complaint “must allege facts that ‘raise a right to relief above the speculative level on the assumption that the allegations in the complaint are true (even if doubtful in fact).’” *Victaulic Co. v. Tieman*, 499 F.3d 227, 234 (3rd Cir. 2007) (citation omitted). Although factual allegations are taken as true, legal conclusions are given no deference—those matters are left for the court to decide. *See Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (noting the tenet that allegations are taken as true on a motion to dismiss “is inapplicable to legal conclusions”). “[W]hen the allegations in a complaint, however true, could not raise a claim of entitlement to relief [as a matter of law], this basic deficiency should . . . be exposed at the point of minimum expenditure of time and money by the parties and the court.” *Cuvillier v. Sullivan*, 503 F.3d 397, 401 (5th Cir. 2007) (internal citations and quotations omitted).

Patentability under 35 U.S.C. § 101 is a threshold legal issue. *Bilski v. Kappos*, 561 U.S. 593, 602 (2010). Accordingly, the § 101 inquiry is properly raised at the pleadings stage if it is apparent from the face of the patent that the asserted claims are not directed to eligible subject matter. *See Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 718-19 (Fed. Cir. 2014) (Mayer, J., concurring). In those situations, claim construction is not required to conduct a § 101 analysis. *Bancorp Servs. L.L.C. v. Sun Life Assur. Co.*, 687 F.3d 1266, 1273 (Fed. Cir. 2012) (“[W]e perceive no flaw in the notion that claim construction is not an inviolable prerequisite to a validity determination under § 101.”).

## **2. The law of 35 U.S.C. § 101.**

Section 101 of the Patent Act sets forth four categories of patentable subject matter: “any new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101.

Also, the law recognizes three exceptions to patent eligibility: “laws of nature, physical phenomena, and abstract ideas.” *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980). Abstract ideas are ineligible for patent protection because a monopoly over these ideas would preempt their use in all fields. *See Bilski*, 561 U.S. at 611-12. In other words, “abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” *Id.* at 653 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

Determining whether a patent claim is impermissibly directed to an abstract idea involves two steps. First, the court determines “whether the claims at issue are directed to a patent-ineligible concept.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). Second, if the claim contains an abstract idea, the court evaluates whether there is “an ‘inventive concept’—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.” *Id.* (internal quotations and citations omitted).

Transformation into a patent-eligible application requires “more than simply stating the abstract idea while adding the words ‘apply it.’” *Id.* at 2357 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (2012)). Indeed, if a claim could be performed in the human mind, or by a human using pen and paper, it is not patent-eligible. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011). Also, a claim is not meaningfully limited if it includes only token or insignificant pre- or post-solution activity—such as identifying a relevant audience, category of use, field of use, or technological environment. *Mayo*, 132 S. Ct. at 1297-98, 1300-01. Finally, “simply appending conventional steps, specified

at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable.” *Id.* at 1300.

**B. The Asserted Patents are invalid under 35 U.S.C. § 101.**

The claims of the Asserted Patents are invalid under 35 U.S.C. § 101 because they fail both prongs of the *Alice* test. Each of the claims is directed to the abstract idea of a sensor alerting the presence of a gas, chemical, or biological object. Abstract ideas are not eligible for patenting. None of the claims contains an “inventive concept sufficient to ensure that the patent in practice amounts to *significantly more* than a patent upon the ineligible concept itself.” *See Alice*, 134 S. Ct. at 2355 (emphasis added). Because the claims of the Asserted Patents are invalid, Rondevoo has failed to state a claim upon which relief may be granted. AerNos therefore respectfully requests that the Court grant its motion and dismiss this case with prejudice. FED. R. CIV. P. 12(b)(6).

**1. *Alice* Step 1: The ‘814 and ‘391 Patents are directed to the abstract idea of a sensor alerting the presence of a gas, chemical, or biological object.**

In determining patent eligibility under § 101, the Court must first determine whether the claims are directed to an abstract idea. *Alice*, 134 S. Ct. at 2355. Under any plausible reading, the claims of the Asserted Patents are directed to an unpatentable, abstract idea because they claim nothing more than the “longstanding,” “routine,” and “conventional” concept of a sensor alerting the presence of a gas, chemical, or biological object. *See Alice*, 134 S. Ct. at 2356; *Bilski*, 561 U.S. at 611.

**a. A sensor changing characteristics in the presence of a gas, chemical, or biological object is an abstract idea.**

Asserted Claim 1 of the ‘814 Patent is representative of the claims of both Asserted Patents. *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d

1343, 1349 (Fed. Cir. 2014) (Where claims are “substantially similar and linked to the same abstract idea,” courts may look to representative claims in a § 101 analysis.). The analysis of whether the claim is directed to an abstract idea begins with the “focus” of the claim—*i.e.*, its “character as a whole.” *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018). The Federal Circuit has explained that courts should examine the patent’s “claimed advance to determine whether the claims are directed to an abstract idea.” *Finjan, Inc. v. Blue Coat System, Inc.*, 879 F.3d 1299, 1303 (Fed. Cir. 2018) (internal quotations omitted). Specifically, courts should determine “whether the claims . . . focus on a specific means or method that improves the technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery.” *McRO, Inc. v. Bandai Namco Games Am., Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016).

The claimed advance of Claim 1 is the abstract idea of a sensor alerting the presence of a gas, chemical, or biological object. The Federal Circuit has held that such detection of natural phenomenon is abstract. For example, in *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, the Federal Circuit held that a method for detecting the presence of a specific nucleic acid was an abstract naturally occurring phenomenon. 788 F.3d 1371, 1376 (Fed. Cir. 2015).

As a real-world example, the Asserted Patents purportedly cover all sensors for detecting a gas, chemical, or biological object so long as the sensors are implemented on the nanoscale. The Asserted Patents therefore cover all carbon monoxide detectors, glucose detectors, and pregnancy tests, so long as the sensor is made with nanotechnology. The breadth of these claims underscore the Court’s concern with preemption of all applications in all fields due to patenting abstract concepts. *See ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 766 (Fed. Cir. 2019) (collecting cases on preemption).

“Most obviously, limiting the claims to [a] particular technological environment . . . is, without more, insufficient to transform them into patent-eligible applications of the abstract idea at their core.” *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016). In determining whether a particular claim is directed to an abstract idea, the Supreme Court and Federal Circuit have made it abundantly clear that limiting the field of use of the abstract idea “to a particular technological environment” does not render the claims any less abstract. *Alice*, 134 S. Ct. at 2358; *Bilski*, 561 U.S. at 610-11; *Content Extraction*, 776 F.3d at 1348. Courts look to whether the claims “improve the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoked generic processes and machinery.” *McRO, Inc.*, 837 F.3d at 1314. Here, the claims do not improve any improved way of alerting the presence of a gas and the specification does not disclose any special or improved way of creating a sensor or nanotechnology.

Specifically, the specification repeatedly indicates that the nano sensor and its related components are created using conventional techniques for the abstract idea of detecting a gas, chemical, or biological object. The specification states in multiple places that “[c]onventional semiconductor structures are formed as is conventional, which for example includes semiconductor devices produced by photolithography or E-beam lithography.” *See, e.g.*, ’814 Patent at 3:28-31. Nano elements, applied to the top of the device, are patterned by “any of the generally available photolithographic techniques utilized in semiconductor processing.” *Id.* at 3:46-48, 4:22-23.

The Asserted Patents claim components performing an abstract concept instead of a “specific means or method for improving technology,” and this is highlighted by the broad language describing the function of the generic components. *RecogniCorp, LLC v. Nintendo Co.*,

*Ltd.*, 855 F.3d 1322, 1326 (Fed. Cir. 2017). Specifically, nano elements are applied to the device and form generic devices such as “resistors, capacitors, inductors, antennas, [and] emitters and sensors.” ’814 Patent at 3:37-38. In other embodiments, the nano elements “form a regular array of resistors, capacitors, inductors, acoustic emitters, acoustic sensors, light emitters, [and] light sensors.” *Id.* at 3:42-44. The claims fail to sufficiently describe how to achieve them, i.e. how the “sensor’s electrical characteristic changes when encountering the gas, chemical or biological object” in a non-abstract way where all of the electrical components are generic and broad. *Id.* at 52:55-57. Even more explicitly, the specification does not describe how “resistance changes when encountering a gas, a chemical, or a biological object”, as in Claim 20 of the ’814 Patent where the specification states simply that nano elements form resistors. The claim limitations do not add anything to the conventional methods of creating sensors with electrical characteristics.

By claiming only the desired result— detecting a gas, chemical, or biological object through changing characteristics of a sensor —without describing any specific roadmap for doing so, Claim 1 of the ’814 Patent falls short of claiming eligible subject matter under § 101. *See Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (finding claim for detecting a location on a chromosome where multiple variations of a particular gene were known based on “a newly discovered fact about human biology (the linkage of coding and non-coding regions of DNA)” was unpatentable subject matter where the patent did not “identify any novel detection techniques”). And because the claimed method can be implemented using any sensor, the Asserted Patents risk preempting all sensors on the nanoscale whose characteristics change when encountering a gas, chemical, or biological object. *See, e.g., Loyalty Conversion Sys. Corp. v. Am. Airlines, Inc.*, 66 F. Supp. 3d 829, 843 (E.D. Tex. 2014) (finding “preemptive effect . . . broad” where “the claims [were] largely functional in nature, they [did] not provide any

significant description of the particular means by which the various recited functions are performed,” and “[a]ll that [was] disclosed [was] the ultimate objective”).

**b. Courts have consistently held claims directed to devices changing physical characteristics for detection are abstract.**

The Federal Circuit and this Court have held that claims directed to general detection through natural phenomena is abstract. More specifically, the claims at issue here fall under the prohibition against patenting both natural phenomenon as well as other abstract ideas. First, the claims of the Asserted Patents are not patentable because they merely claim natural phenomenon. Representative Claim 1 directly claims a sensor where its “electrical characteristic changes when encountering the gas, chemical or biological object.” The limitation requiring an electrical characteristic to change in the presence of a gas, chemical, or biological object is similar to that in *Cleveland Clinic Found. v. True Health Diagnostics LLC*, 760 F. App’x 1013, 1017 (Fed. Cir. 2019). In *Cleveland Clinic*, an exemplary claim was directed to detecting a certain concentration in a plasma sample and comparing that concentration with that of the general population. The Federal Circuit found the claims to be abstract because they recited a natural law that certain blood levels correlated with a disease. *Id.* at 1018-19. Similarly, here, a claim reciting electrical characteristics changing in the presence of a gas, chemical, or biological object simply recites a natural law correlating the predetermined relationship between electrical characteristics and natural elements.

The claims of the Asserted Patents also violate the prohibition against abstract ideas, specifically general detection, apart and separate from the prohibition on patenting natural phenomenon. For example, in *FairWarning IP, LLC v. Iatric Sys., Inc.*, the Federal Circuit held that an automated system for “detecting fraud and/or misuse in a computer environment based on analyzing data” according to “one of several rules” was directed to an abstract idea. 839 F.3d



1089, 1093 (Fed. Cir. 2016). Here, the claims are even more abstract because the detection of a gas, chemical, or biological object is not according to one of several rules, but is merely determined through the changing characteristics of the sensor. Like the claims in *FairWarning*, the claims here “merely implement an old practice in a new environment,” *id.* at 1094, that is, a sensor that encounters a gas, chemical, or biological object in the nano context.

In another case, the Federal Circuit found claims that included the limitation “screening an equipment operator by one or more expert systems to detect potential impairment of said equipment operator” to be abstract because the claims did not describe “how to perform either screening or testing.” *Vehicle Intelligence & Safety LLC v. Mercedes-Benz USA, LLC*, 635 F. App’x 914, 916-17 (Fed. Cir. 2015). The claims here similarly do not describe how to detect or measure a gas, chemical, or biological object.

This Court has similarly found general detection claims to be abstract. In *D & M Holdings Inc. v. Sonos, Inc.*, this Court held that claims containing limitations of “detecting changes in software available to playback the recorded signal” and “automatically downloading the software to playback the recorded signal” were directed to an abstract idea. 309 F. Supp. 3d 207 (D. Del. 2018). This Court explained that these limitations did not disclose any improvement in computer functionality and instead were automation of once manual methods. Similarly, the claims requiring a sensor’s characteristics to change in the presence of a gas, chemical, or biological object do not improve any sensor technology and merely claim a conventional sensor with a field restriction to nanotechnology. *See Mayo*, 132 S. Ct. at 1301 (explaining that “limiting an abstract idea to one field of use or adding token postsolution components [does] not make the concept patentable”).

Rondevoo may argue that the claims of the Asserted Patents are not abstract because the

purported invention is directed to a physical device, but Federal Circuit case law shows that claims may be abstract even where they are directed to physical devices. For example, in *ChargePoint, Inc. v. SemaConnect, Inc.*, the Federal Circuit stated that even “a specification full of technical details about a physical invention may nonetheless conclude with claims that claim nothing more than the broad law or abstract idea underlying the claims, thus preempting all use of that law or idea.” 920 F.3d 759 (Fed. Cir. 2019). The Federal Circuit found that even where the claim appeared to disclose a “an electric vehicle charging station,” the “focus of the claim [was] on the abstract idea of network communication for device interaction.” *Id.* at 770. Here, though the claim recites a physical sensor, the focus of the claim is on the ability of the sensor to change characteristics when encountering a gas, chemical, or biological object. Accordingly, the claims of the Asserted Patents are abstract.

**2. *Alice* Step 2: The Asserted Patents’ claims do not contain an inventive concept sufficient to transform the abstract idea into patent-eligible subject matter.**

Because Claim 1 is directed to an abstract idea, the Court must next determine whether it contains an “inventive concept sufficient to transform the claimed abstract idea into a patent eligible application.” *Alice*, 134 S. Ct. at 2357 (internal quotations omitted). To pass this test, Claim 1 “must include additional features” that “must be more than well-understood, routine, conventional activity.” *Ulramercial*, 772 F.3d at 715 (quotation omitted). “If a claim’s only ‘inventive concept’ is the application of an abstract idea using conventional and well-understood techniques, the claim has not been transformed into a patent-eligible application of an abstract idea.” *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir. 2018). Here, Claim 1 is broadly generic and does not contain meaningful limitations restricting it to a non-routine, specific application of the abstract idea.

Rondevoo cannot argue that the claims of the Asserted Patents add significantly more to an inventive concept where the inventive concept is merely a recitation of the abstract concept. *BSG Tech*, 899 F.3d at 1291. In particular, Rondevoo cannot argue that the Asserted Patents disclose any inventive concept related to the concept of a sensor changing characteristics when encountering a gas, chemical, or biological object. Not a single technical improvement is disclosed in the Asserted Patents, much less claimed, and the claimed components are described based on their functions rather than on specific improvements in hardware. The claims all include an upper layer, a lower layer, and a sensor positioned between the layers. The layer limitations merely provide positioning information and are not any technical improvement. There is no technical improvement as disclosed for the nano sensor. Additionally, the specification describes the components, including nano components, as being created in conventional manners.

The specification is replete with statements that the components of the purported invention are conventional. In describing the fabrication of nano electronic components and systems, the specification states that nano elements such as semiconductors are “formed as is conventional, which for example includes semiconductor devices produced by photolithography or E-beam lithography.” ’814 Patent at 3:29-31. Additionally, and relevant to dependent claims, in “the next to the last conventional steps, gold electrodes are formed.” *Id.* at 3:32-33. In one embodiment, nano elements are patterned on the device using “any of the generally available photolithographic techniques utilized in semiconductor processing.” *Id.* at 4:22-23. In another embodiment, active devices are “formed utilizing conventional semiconductor processing equipment.” *Id.* at 3:55-56. For creating the first layer of electrical conductors, one can use “any of the techniques used to create thin organic films.” *Id.* at 4:13-14. Then, the patterning of the

electrical conductors “is accomplished by any of the generally available photolithographic techniques utilized in semiconductor processing.” *Id.* at 3:46-48, 4:21-23. In creating a multilayer semiconductor polymer film, one can use the same or similar methods as used to create the first layer, including, for example, “conventional sputtering or electron-beam deposition techniques.” *Id.* at 5:11-12.

In another embodiment where the nano elements are in a chain, the elements may be “capacitors, inductors, or combination of one or more of these three types of molecular elements or nano elements” that would be “obvious to those skilled in the art.” *Id.* at 8:62-64. A switch is then used in the circuit, and in the preferred embodiment, “each electrically controllable switch is a conventional MOSFET.” *Id.* at 9:34-35. Other embodiments include monolayer arrays of nano elements that are formed by “conventional techniques employing self-assembled monolayers.” *Id.* at 10:16-17.

In the nano antenna embodiment, the wireless communication device includes a processor core “that is fabricated using conventional semiconductor processes such as CMOS.” *Id.* at 12:30-32. The processor core can also be fabricated “using nano elements such as transistors, diodes, capacitors, [and] resistors, as described above or using conventional semiconductor processes on a semiconductor substrate.” *Id.* at 12:41-44. The specification continues to state that the components are made using conventional semiconductor techniques over and over. In the nano image sensor embodiment, the specification states that the “electronic circuit can also perform various image processing operations well-known in the art.” *Id.* at 31:9-10.

The specification also states that the readout of the device is done through conventional methods. For example, “the exposed energy pattern can be read out electronically as in

conventional memory devices.” *Id.* at 19:46-47. Indeed, the disclosed “nano display devices can include driver circuits for driving rows and columns electrodes, digital signal processing units, memory, display mode control, [and] power drivers which are typically found in conventional electronic displays.” *Id.* at 36:4-8, 36:8-12. Magnification of the image the nano display is accomplished “using refractive or reflective lens assemblies that are well-known and widely utilized in standard optical projection systems.” *Id.* at 36:22-24.

There is nothing “inventive” about using conventional components to detect and measure gases. To the extent the technical improvement is taking a applying a sensor on the nanoscale so that its characteristics change in the presence of a gas, chemical, or biological object, this cannot be a technical improvement under *Alice* because this improvement would be directed to the abstract idea. *ChargePoint*, 920 F.3d at 774 (finding that the alleged inventive concept could not solve the problem of a network-controlled charging station because the network control was the abstract idea itself).

Additionally, the limitations requiring measuring cannot be the inventive act because they do not admit any meaningful limitations of the abstract idea. Like the Supreme Court found in *Mayo*, measuring levels of a natural object is a routine step and does not have any meaningful limitation such that this step would create an inventive act. *Mayo*, 132 S.Ct. at 1297-98; *see also Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, 874 F.3d 1329 (Fed. Cir. 2017), cert. denied, 139 S. Ct. 378, 202 L. Ed. 2d 288 (2018) (claims directed to monitoring the delivery of real-time information to users or measuring such delivery for commercial purposes lacked inventive concept).

Moreover, the abstract functional descriptions in the specification describing the components of the claims are devoid of any technical explanation as to how to implement the

purported invention in an inventive way. *See In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 615 (Fed. Cir. 2016) (explaining that claims failed *Alice's* step 2 where specification limited its discussion of “additional functionality” of conventional components “to abstract functional descriptions devoid of technical explanation as to how to implement the invention”). The specification provides no nonconventional way of detecting or measuring gases.

There are no genuine disputes of fact in this case necessitating a determination of the well-known, routine, and ordinary nature of the claimed components. This case is thus fundamentally different from *Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018). In *Berkheimer*, the Federal Circuit noted that the specification explicitly “describe[d] an inventive feature that store[d] parsed data in a purportedly unconventional manner.” 881 F.3d at 1369. The Federal Circuit then examined whether the improvements described in the specification were included in the claims. For those claims where the inventive feature in the specification was “captured in the claims,” the Federal Circuit found a “factual dispute regarding whether the invention describe[d] well-understood, routine, and conventional activities.” *Id.* But where the claims did not recite the purportedly inventive features described in the specification, the Federal Circuit concluded that they were directed to patent ineligible subject matter under § 101. *Id.*

Here, unlike in *Berkheimer*, there is no need for fact discovery because neither the claims nor the specification describes any unconventional components or the use of generic components in some unconventional manner. In fact, the specification describes the exact opposite with its surfeit of “conventional” disclaimers. *See, e.g.*, '814 Patent at 3:32-34, 3:55-56, 5:10-12, 9:31-35, 10:15-17, 12:31-33, 12:41-45, 16:63-67, 19:45-50, 20:12-18, 21:30-33, 26:31-37, 29:54-57, 30:35-40, 34:52-55, 36:4-15.

The Asserted Patents here are also different from those in *Cellspin Soft, Inc. v. Fitbit, Inc.*, 927 F.3d 1306 (Fed. Cir. 2019). In that case, the patent owner made allegations in its amended complaints that certain claimed steps such as capturing, transferring, and publishing data were unconventional because these steps allowed the resulting device to be smaller and simpler. *Id.* at 1316-17. The Federal Circuit found that accepting those allegations as true, it could not conclude the claims lacked an inventive concept because the patent owner made those specific allegations of inventiveness and there was no evidence showing these steps were well-known or conventional. *Id.* at 1318. By contrast, here, as explained above, the specification makes it clear that the nano sensors are built and operated using conventional components and steps, and the Complaint contains no allegations suggesting the components are unconventional.

### **3. The remaining claims of the Asserted Patents are also abstract.**

The remaining claims of the Asserted Patents relate to the same abstract concept of sensors alerting the presence of a gas, chemical, or biological object. The only differences are immaterial in the context of a § 101 analysis. The remaining independent claims merely reword the general concept from Claim 1, and all claim a device with an upper layer and a lower layer that either detects and/or measures gases. The dependent claims add basic, generic components to the already patent ineligible concept. To the extent the dependent claims broadly characterize a type of detection, these claims are merely token or insignificant pre- or post-solution activities insufficient to transform the abstract idea into patent-eligible subject matter. *See Mayo*, 132 S. Ct. at 1297-98, 1300-01.

None of these additional features amount to an inventive feature or render the claims any less abstract. Regardless of their form, therefore, all of the claims of the Asserted Patents fail both prongs of *Alice* because they are directed to an abstract idea and recite no inventive concept. *Alice*, 134 S. Ct. at 2355, 2357.

**V. CONCLUSION**

For the foregoing reasons, AerNos respectfully requests that the Court dismiss Rondevoo's Complaint for failure to state a claim upon which relief can be granted. Because leave to amend would be futile, AerNos requests dismissal with prejudice.

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